

WHAT IS CLAIMED IS:

1. A method of suturing a portion of biological tissue using a suturing device having a longitudinal axis, a needle attached to a suture, a needle driver, and at least one needle holder, the method comprising:

5 (a) positioning a distal needle holder in a distal position relative to the portion of biological tissue, the distal needle holder adapted to releasably hold the needle, and positioning a distal end of the needle driver in a proximal position relative to the portion of biological tissue;

10 (b) positioning the needle in either the proximal position or the distal position;

(c) moving the needle driver longitudinally in a first direction along a path substantially parallel to the longitudinal axis such that the needle and suture pass through the portion of biological tissue, thereby forming a suture incision through which the suture passes; and

15 (d) repeating (a) - (c) to form a series of stitches.

2. The method of Claim 1 further comprising moving the needle driver longitudinally in a second direction substantially opposite to the first direction along the path substantially parallel to the longitudinal axis .

3. The method of Claim 1, wherein the needle is positioned in a proximal position relative to the portion of biological tissue by releasably holding the needle in a proximal needle holder positioned in a proximal position relative to the portion of biological tissue.

25 4. The method of Claim 3, wherein moving the needle driver longitudinally in the first direction advances the needle from the proximal needle holder to the distal needle holder.

5. The method of Claim 3, wherein the distal needle holder is positioned in the distal position relative to the portion of biological tissue by placing the proximal needle holder in the distal position.

30 6. The method of Claim 3, wherein the needle is positioned in the proximal position relative to the portion of biological tissue by releasably holding the needle with the distal needle holder positioned in the distal position relative to the portion of biological tissue and translating the distal needle holder to the proximal position.

7. The method of Claim 3, wherein the needle is positioned in the proximal position relative to the portion of biological tissue by translating the proximal needle holder distally along a path substantially parallel to the longitudinal axis to engage the needle being releasably held by the distal needle holder, releasably holding the needle with the proximal needle driver, releasing the needle from the distal needle holder, and translating the proximal needle holder and needle proximally along a path substantially parallel to the longitudinal axis to the proximal position.

8. The method of Claim 1, wherein the needle is positioned in a proximal position relative to the portion of biological tissue by releasably holding the needle near a distal end of the needle driver.

9. The method of Claim 8, wherein moving the needle driver longitudinally in the first direction results in the needle being releasably held by the distal needle holder.

10. The method of Claim 9, wherein the method further comprises releasing the needle from the needle driver after the needle is releasably held by the distal needle holder.

11. The method of Claim 10, wherein the needle is positioned in the proximal position relative to the portion of biological tissue by extending the needle driver longitudinally, releasably holding the needle near the distal end of the needle driver, releasing the needle from the distal needle holder, and retracting the needle driver and the needle to the proximal position.

12. The method of Claim 2, wherein the needle is positioned in a distal position relative to the portion of biological tissue by releasably holding the needle with the distal needle holder.

13. The method of Claim 12, wherein moving the needle driver longitudinally in the first direction advances the needle from the distal position to the proximal position.

14. The method of Claim 13, wherein the needle is releasably held by the needle driver after moving the needle driver longitudinally in the second direction.

15. The method of Claim 14, wherein the needle is positioned in the distal position relative to the portion of biological tissue by extending the needle driver

longitudinally, releasably holding the needle with the distal needle holder, releasing the needle from the needle driver, and retracting the needle driver to the proximal position.

16. A method for suturing a portion of biological tissue, the method comprising:

5                   releasably holding a needle with a first needle holder, the needle being attached to a suture;

                  placing the first needle holder in a proximal position relative to a portion of biological tissue and placing a second needle holder in a distal position relative to the portion of biological tissue, so that the portion of biological tissue is between the first needle holder and the second needle holder;

10                   applying a force to the needle by engaging the needle with a needle driver and extending the needle driver in the distal direction, thereby transferring the needle from the first needle holder, through the portion of biological tissue between the first and second needle holders, to the second needle holder;

15                   disengaging the needle driver from the needle and retracting the needle driver in the proximal direction away from the needle and the first and second needle holders;

                  laterally withdrawing the first and second needle holders from the portion of biological tissue;

20                   exchanging positions of the first and second needle holders so that the first needle holder is in a distal position relative to the second needle holder and the needle.

17. A suturing device for suturing a portion of biological tissue, the device comprising:

25                   a needle attached to a suture;

                  a first needle holder that releasably holds the needle;

                  a needle driver adapted to be advanced and retracted substantially parallel to a longitudinal axis of the suturing device.

30                   18. The suturing device of Claim 17 further comprising a second needle holder adapted to releasably hold the needle, wherein the first and second needle holders are coupled to be alternately positionable in a proximal position or a distal position relative to the portion of biological tissue.



22. A suturing device for suturing a portion of biological tissue, the device comprising:

a needle attached to a suture;

5 a needle holder adapted to releasably hold the needle, the needle holder positioned distally relative to the portion of biological tissue;

a needle driver adapted to releasably hold the needle and to advance the needle along a path substantially parallel to the longitudinal axis of the suturing device.

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